Sanitation in HOME LAUNDERING

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Sanitation in HOME LAUNDERING

By ETHEL MCNEIL, Microbiologist
Clothing and Housing Research Division, Agricultural Research Service

Research has shown that a suitable disinfectant used during laundering can prevent or reduce the spread of bacterial infections by clothing and household textiles.

Sanitizing—or reducing the total number of bacteria in fabrics to a safe level—can be done inexpensively, easily, and without damage to the fabric.

This bulletin presents practical methods of sanitizing home laundry. It reports the use of four types of disinfectants that the Clothing and Textiles Laboratory of the U.S. Department of Agriculture found effective in killing bacteria during laundering.

Such a disinfectant is often necessary because bacteria can remain alive through home laundering—whether it is done in individually owned washing machines or in machines used by several families, such as coin-operated machines.

Bacteria can be transferred from one article of clothing to another during laundering.

They also can remain alive on the inner surface of the washing machine and be transferred from one load of clothes to another. This makes it possible for bacteria on the clothes of one family to be transferred to the clothes of another family when a machine is used by several families.

KINDS OF BACTERIA

In the laboratory, clothing and household textiles of nine families were washed regularly for several months. An automatic household washer and typical home laundry methods were used, both with and without a disinfectant. Studies of the laundry show that 30 kinds of bacteria survived.

A few of these bacteria are potentially harmful. Among them are—

- *Staphylococcus aureus*, frequently known as staph. This can cause boils, carbuncles, skin infections, respiratory infections, kidney infections, and other types of infections.
- *Pseudomonas aeruginosa*, frequently known as the green pus producer. This can cause skin and kidney infections. It often is present in chronic infections of the middle ear.
- Paracolon bacteria. Some of the bacteria in this family produce intestinal disturbances.

WHAT IS THE PROBLEM?

Survival of bacteria in freshly washed clothes and household textiles is primarily a modern problem. Formerly, many homemakers boiled their clothes—especially if there was sickness. As long as laundry was boiled, heat destroyed bacteria so that clean clothes were also sanitized clothes.

With the introduction of automatic equipment, however, boiling water was replaced with wash water of lower temperatures.

While both time and temperature are important in killing bacteria, the exact water temperature and the exact washing time needed are dependent on the kind of bacteria present.

Neither the water temperatures nor the detergents used in today's automatic washers can be relied on to reduce the number of bacteria in fabrics to a safe level.

Some bacteria, of course, are released from fabrics during washing and go down the drain with wash or rinse water. But many others stay in fabrics. Even at the "hot" water setting, 1 ounce (2 tablespoons) of wash water may contain as many as 1 million bacteria.

Bacteria in Washing Machines

Home equipment specialists recommend a temperature of 140° F. for hot water laundering. At that temperature, it takes 20 minutes to kill Staphylococci. However, the average home laundering cycle is not 20 minutes, and the average water temperature is not 140°.

Actually, the average washing cycle is 10 minutes, with a range of 5 to 12 minutes.

Surveys have shown that the average wash water temperature in home laundering is 125° to 130° F. at the hot water setting. In 25 coin-operated machines at 16 locations, maximum water temperatures ranged from 105° to 150°, with a 128° average.

Of course, many loads of laundry are washed in "warm" water (at approximately body temperature). Manufacturers often recommend warm water to preserve the appearance of fabrics.

At least one detergent for cold water laundering is available.

Because of short washing cycles and relatively low water temperatures, home laundering cannot be expected to destroy large numbers of bacteria.

Bacteria in Dryers

Some fabrics may be heavily contaminated when they go into dryers. Automatic dryers and line drying cannot be depended on to kill all bacteria on heavily contaminated clothes, but they can be depended on to reduce the number of bacteria. Survival of bacteria varies with the size of the load, the drying temperature, and drying time.

When an automatic dryer is installed, the exhaust should be vented to the outdoors. This will prevent the "atomizing" of bacteria released from fabrics during drying into the room.

All measures that reduce the number of bacteria in laundering and drying will automatically improve the sanitation of the fabrics.

CAN BACTERIA BE CONTROLLED?

Some homemakers became aware of the spread of bacteria by clothing and textiles when their families developed stubborn infections. The infections spread from one person to another.

In response to requests from these homemakers, microbiologists of USDA's Clothing and Textiles Laboratory studied bacteria

found in family laundering. Then they searched for a practical way to improve sanitation of home laundering by the use of a suitable disinfectant.

A disinfectant had to meet the following criteria to be considered suitable as a laundry sanitizer:

- It must kill many kinds of bacteria.
- It must not injure or discolor fabrics.
- It must not leave a residue on clothes that is harmful to humans.
- If used in the wash cycle, it must be compatible with the detergent.
- It must be readily available.
- It must be reasonable in cost.

Researchers found that four types of disinfectants meet these requirements. All are considered to be effective as sanitizers when used according to directions.

Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement over products not mentioned.

WHAT PRODUCTS ARE AVAILABLE?

The following products are available for use as sanitizers in home laundering:

Quaternary disinfectants

Quaternary disinfectants are sometimes known as quats.

Examples:

Co-op Sanitizer; available in certain supermarkets.

Roccal; available from janitors', dairy, and poultry supply houses.

Liquid chlorine disinfectants

Liquid chlorine disinfectants (liquid chlorine bleaches) should contain 5.25 percent of sodium hypochlorite as the active ingredient.

Examples:

Clorox.
Fyne Tex (liquid) Bleach.
King (liquid) Bleach.
Purex (liquid).
Available in grocery stores.

Pine oil disinfectants

The label of a pine oil disinfectant should state that the product contains at least 80 percent of pine oil.

Examples:

Fyne Pyne.
Fyne Tex.
King Pine.
Pine-O-Pine.
White Cap.
Available in grocery stores.

Phenolic disinfectants

Phenolic disinfectants are available containing approximately 3 percent of active ingredient.

Examples:

Al Pine.
Pine-Sol.
Available in grocery stores.

USING DISINFECTANTS

In using a disinfectant in your laundry, always—

- Read the label.
- Follow all directions and heed all precautions.
- Measure disinfectant carefully.
- Add disinfectant to the recommended wash or rinse cycle.

Quaternary Disinfectants

Add quaternary disinfectants to the water at the beginning of the rinse cycle.

Use the amount recommended on the label. Or add ½ cup (4 ounces) to rinse water in a top-loading machine. Add 6 tablespoons (3 ounces) to rinse water in a front-loading machine.

Liquid Chlorine Disinfectants

In using a liquid chlorine disinfectant, or bleach, observe warnings on the bottle label. Liquid chlorine bleaches are not suitable for use on wool, silk, spandex, or certain dyed and finished fabrics.

Add liquid chlorine bleach to water and mix in before putting clothes into the washing machine. If this is not possible, dilute bleach in 1 quart of water before adding it to the washer. Do not use bleach in rinse water.

Use the amount of liquid chlorine bleach recommended for bleaching. Usually, 1 cup (8 ounces) is added to a top-loading machine; ½ cup (4 ounces) is added to a front-loading machine.

Pine Oil Disinfectants

Add pine oil disinfectants at the beginning of the wash cycle. If possible, pour it into the water before placing clothes in the machine.

Use ¾ cup (6 ounces) for a top-loading machine and ½ cup (4 ounces) for a front-loading machine.

Phenolic Disinfectants

Add phenolic disinfectants to either the wash or the rinse water.

With a phenolic disinfectant containing approximately 3 percent of active ingredient, use 1 cup (8 ounces) of phenolic disinfectant for a top-loading machine or 10 tablespoons (5 ounces) for a front-loading machine.

SANITIZING HINTS

Sanitize the washing machine occasionally. This will kill bacteria that live on the interior surface. Pour a disinfectant into the empty machine; then complete a 15-minute cycle at the hot water setting.

Sort dirty clothes and clean clothes at different times. Do not shake dirty clothes near clean laundry, or near surfaces that will later be used for sorting laundry. Shaking dirty clothes releases bacteria, which then settle on nearby surfaces.

If possible, sort dirty clothes on a table or in one area; sort and fold clean clothes on a second surface and in another area. If this

is not possible, cover the table or the work area with clean paper, plastic sheeting, or any other clean material before working with clean clothes. This will prevent bacteria from being redeposited on freshly washed clothes. For the same reason, cover canvas-bottomed carts with clean paper or plastic before loading them with clean laundry. Such precautions are especially important when laundering facilities are shared.

Good hygiene requires that washing of clothing be carried out separately from washing of food containers. For example, do not wash plastic milk bottles in automatic clothes washers—even if a liquid chlorine bleach is added.

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